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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 03 June 1999 (03.06.99)	
International application No. PCT/GB98/03137	Applicant's or agent's file reference PA 3355
International filing date (day/month/year) 21 October 1998 (21.10.98)	Priority date (day/month/year) 23 October 1997 (23.10.97)
Applicant COX, Roland	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
29 April 1999 (29.04.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer C. Carrié Telephone No.: (41-22) 338.83.38
---	---

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

HALE, Stephen, Geoffrey
J.Y. & G.W. Johnson
Kingsbourne House
229-231 High Holborn
London WC1V 7DP
ROYAUME-UNI

Date of mailing (day/month/year) 25 August 1999 (25.08.99)	IMPORTANT NOTIFICATION International filing date (day/month/year) 21 October 1998 (21.10.98)
Applicant's or agent's file reference PA 3355	
International application No. PCT/GB98/03137	

1. The following indications appeared on record concerning:

☒ the applicant
 ☐ the inventor
 ☐ the agent
 ☐ the common representative

Name and Address AKZO NOBEL UK PLC 50 George Street London W1A 2BB United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
 ☒ the name
 ☒ the address
 ☐ the nationality
 ☐ the residence

Name and Address AKZO NOBEL UK LIMITED P.O. Box 20980 Oriel House 16 Connaught Place London W2 2ZB United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Catherine Massetti Telephone No.: (41-22) 338.83.38
---	--

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

HALE, Stephen, Geoffrey
J.Y. & G.W. Johnson
Kingsbourne House
229-231 High Holborn
London WC1V 7DP
ROYAUME-UNIRECEIVED
- 1 SEP 1999

Date of mailing (day/month/year) 25 August 1999 (25.08.99)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference PA 3355	
International application No. PCT/GB98/03137	International filing date (day/month/year) 21 October 1998 (21.10.98)

1. The following indications appeared on record concerning:		
<input checked="" type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input type="checkbox"/> the agent
<input type="checkbox"/> the common representative		
Name and Address AKZO NOBEL UK PLC 50 George Street London W1A 2BB United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input type="checkbox"/> the person	<input checked="" type="checkbox"/> the name	<input checked="" type="checkbox"/> the address
<input type="checkbox"/> the nationality		
<input type="checkbox"/> the residence		
Name and Address AKZO NOBEL UK LIMITED P.O. Box 20980 Oriol House 16 Connaught Place London W2 2ZB United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned	
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Gen. va 20, Switzerland	Authorized officer Catherine Massetti
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For rec

Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

PA 3353 — ?

Box No. I TITLE OF INVENTION

METHODS OF CONTROLLING HOUSE DUST MITES AND BEDMITES

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

AKZO NOBEL UK PLC
50 George Street,
London W1A 2BB,
United Kingdom.

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

United Kingdom

State (that is, country) of residence:

United Kingdom

This person is applicant
for the purposes of:☐all designated
States☒all designated States except
the United States of America☐the United States
of America only☐the States indicated in
the Supplemental Box**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

COX, Roland
11 Wickersley Close,
Darley Abbey,
Derby
DE22 2XT,
United Kingdom.

This person is:

☐ applicant only☒ applicant and inventor☐ inventor only (If this check-box
is marked, do not fill in below.)

State (that is, country) of nationality:

United Kingdom

State (that is, country) of residence:

United Kingdom

This person is applicant
for the purposes of:☐all designated
States☐all designated States except
the United States of America☒the United States
of America only☐the States indicated in
the Supplemental Box☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf
of the applicant(s) before the competent International Authorities as:

☒

agent

☐

common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

HALE, Stephen Geoffrey
J.Y. & G.W. Johnson
Kingsbourne House,
229-231 High Holborn,
London WC1V 7DP,
United Kingdom

Telephone No.

0171 405 0356

Facsimile No.

0171 831 9628

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> AL Albania <input checked="" type="checkbox"/> AM Armenia <input checked="" type="checkbox"/> AT Austria <input checked="" type="checkbox"/> AU Australia <input checked="" type="checkbox"/> AZ Azerbaijan <input checked="" type="checkbox"/> BA Bosnia and Herzegovina <input checked="" type="checkbox"/> BB Barbados <input checked="" type="checkbox"/> BG Bulgaria <input checked="" type="checkbox"/> BR Brazil <input checked="" type="checkbox"/> BY Belarus <input checked="" type="checkbox"/> CA Canada <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein <input checked="" type="checkbox"/> CN China <input checked="" type="checkbox"/> CU Cuba <input checked="" type="checkbox"/> CZ Czech Republic <input checked="" type="checkbox"/> DE Germany <input checked="" type="checkbox"/> DK Denmark <input checked="" type="checkbox"/> EE Estonia <input checked="" type="checkbox"/> ES Spain <input checked="" type="checkbox"/> FI Finland <input checked="" type="checkbox"/> GB United Kingdom <input checked="" type="checkbox"/> GE Georgia <input checked="" type="checkbox"/> GH Ghana <input checked="" type="checkbox"/> GM Gambia <input checked="" type="checkbox"/> GW Guinea-Bissau <input checked="" type="checkbox"/> HR Croatia <input checked="" type="checkbox"/> HU Hungary <input checked="" type="checkbox"/> ID Indonesia <input checked="" type="checkbox"/> IL Israel <input checked="" type="checkbox"/> IS Iceland <input checked="" type="checkbox"/> JP Japan <input checked="" type="checkbox"/> KE Kenya <input checked="" type="checkbox"/> KG Kyrgyzstan <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea <input checked="" type="checkbox"/> KR Republic of Korea <input checked="" type="checkbox"/> KZ Kazakhstan <input checked="" type="checkbox"/> LC Saint Lucia <input checked="" type="checkbox"/> LK Sri Lanka <input checked="" type="checkbox"/> LR Liberia | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> LS Lesotho <input checked="" type="checkbox"/> LT Lithuania <input checked="" type="checkbox"/> LU Luxembourg <input checked="" type="checkbox"/> LV Latvia <input checked="" type="checkbox"/> MD Republic of Moldova <input checked="" type="checkbox"/> MG Madagascar <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia <input checked="" type="checkbox"/> MN Mongolia <input checked="" type="checkbox"/> MW Malawi <input checked="" type="checkbox"/> MX Mexico <input checked="" type="checkbox"/> NO Norway <input checked="" type="checkbox"/> NZ New Zealand <input checked="" type="checkbox"/> PL Poland <input checked="" type="checkbox"/> PT Portugal <input checked="" type="checkbox"/> RO Romania <input checked="" type="checkbox"/> RU Russian Federation <input checked="" type="checkbox"/> SD Sudan <input checked="" type="checkbox"/> SE Sweden <input checked="" type="checkbox"/> SG Singapore <input checked="" type="checkbox"/> SI Slovenia <input checked="" type="checkbox"/> SK Slovakia <input checked="" type="checkbox"/> SL Sierra Leone <input checked="" type="checkbox"/> TJ Tajikistan <input checked="" type="checkbox"/> TM Turkmenistan <input checked="" type="checkbox"/> TR Turkey <input checked="" type="checkbox"/> TT Trinidad and Tobago <input checked="" type="checkbox"/> UA Ukraine <input checked="" type="checkbox"/> UG Uganda <input checked="" type="checkbox"/> US United States of America <input checked="" type="checkbox"/> UZ Uzbekistan <input checked="" type="checkbox"/> VN Viet Nam <input checked="" type="checkbox"/> YU Yugoslavia <input checked="" type="checkbox"/> ZW Zimbabwe <input checked="" type="checkbox"/> GD Grenada <input type="checkbox"/> |
|---|---|

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)


Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claim indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) 23 October 1997 (23.10.97.)	8722448.9	GB		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY			
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used)		Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority)	
ISA /		Date (day/month/year)	Number Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING	
This international application contains the following number of sheets: request : 3 description (excluding sequence listing part) : 7 claims : 2 abstract : 1 drawings : sequence listing part of description : Total number of sheets : 13	This international application is accompanied by the item(s) marked below: 1. <input type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney x 1 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input type="checkbox"/> other (specify):
Figure of the drawings which should accompany the abstract:	Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT	
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).	
 Stephen Geoffrey HALE	

For receiving Office use only	
1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	
6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only
Date of receipt of the record copy by the International Bureau:

The demand must be filed directly with the competent International Preliminary Examining Authority or, if more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION	
Applicant's or agent's file reference PA 3355	
International application No. PCT/GB98/03137	International filing date (day/month/year) 21 October 1998 (21.10.98.)
(Earliest) Priority date (day/month/year) 23 October 1997 (23.10.97.)	
Title of invention METHODS OF CONTROLLING HOUSE DUST MITES AND BEDMITES	
Box No. II APPLICANT(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
Akzo Nobel UK PLC 50 George Street, London W1A 2BB, United Kingdom.	
Telephone No.:	
Facsimile No.:	
Teleprinter No.:	
State (that is, country) of nationality: United Kingdom	State (that is, country) of residence: United Kingdom
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
COX, Roland 11 Wickersley Close, Darley Abbey, Derby DE22 2XT, United Kingdom	
State (that is, country) of nationality: United Kingdom	State (that is, country) of residence: United Kingdom
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
State (that is, country) of nationality:	State (that is, country) of residence:
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.	

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*HALE, Stephen Geoffrey
J.Y. & G.W. Johnson
Kingsbourne House,
229-231 High Holborn,
London WC1V 7DP

Telephone No.:

0171 405 0356

Facsimile No.:

0171 831 9628

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed

the description

☐ as originally filed☐ as amended under Article 34

the claims

☐ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34

the drawings

☐ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☐ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (<i>specify</i>) | : | sheets |

For International Preliminary Examining Authority use only

received not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet | 4. <input type="checkbox"/> statement explaining lack of signature |
| 2. <input type="checkbox"/> separate signed power of attorney | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input type="checkbox"/> other (<i>specify</i>): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



Stephen Geoffrey HALE

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply. ☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PA 3355	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB98/03137	International filing date (day/month/year) 21/10/1998	Priority date (day/month/year) 23/10/1997
International Patent Classification (IPC) or national classification and IPC A01N25/34		
Applicant AKZO NOBEL UK PLC et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 29/04/1999	Date of completion of this report 12.08.99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0 Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer Elliott, A Telephone No. (+49-89) 2399 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/03137

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-7 as originally filed

Claims, No.:

1-10 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	-
	No:	Claims	1-10
Inventive step (IS)	Yes:	Claims	-
	No:	Claims	1-10
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	-

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/03137

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB98/03137

The application relates to the use of a polymeric article having incorporated therein a chemical compound active against fungi of the groups *aspergillus glaucus* and or *aspergillus restrictus* as a means of controlling house dust mites and bedmites. Further independent claims are directed to a filling material for an article of bedding or an upholstered article containing the above fungicide, an article of bedding or an upholstered article filled with the above filling material, and finally a bedding fabric comprising fibres containing the fungicidal compound. The house dust mites and bedmites are controlled by the use of such material because the particular fungi thrive on dead skin fragments and their presence on the dead skin fragments turns the dead skin fragments into a more suitable food source for the house dust mites and bed mites.

The following documents are referred to in this opinion:

- D1: WO 97 24484 A (SOGILO NV) 10 July 1997
- D2: EP-A-0 047 553 (GIST BROCADES NV) 17 March 1982
- D3: GB-A-2 309 461 (COURTAULDS FIBRES) 30 July 1997

V Reasoned statement under Art 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

i. Novelty (Article 33(2) PCT)

It would appear that the control of dust mites via control of the fungi growing on dead skin fragments has already been addressed in the prior art.

D1 discloses a covering for beds and similar articles which is equipped with an acaricidal biocide installed in the covering (cf. D1, front page abstract). That D1 deals with the problems associated with house dust mites and bed mites and allergies resulting from these can be seen from page 1 of D1 (lines 12 onwards). In a preferred form (cf. page 4, lines 19-26, a biocide is used which exhibits bactericidal, fungicidal and acaricidal activities; the growth of fungi is thus inhibited and with the fungi a possible culture medium for house dust mites. D1 is directed principally towards mattress protectors (page 7, lines 11 and 12) but can also be used for filling materials of cushions and duvets (cf. the paragraph bridging pages 7 and 8). The methods for manufacturing the material according to D1 are also disclosed in D1.

Claims **1-10** would therefore appear to lack novelty with respect to D1.

D2 discloses a method for combatting and/or preventing allergic diseases caused by house dust mites by treating the mites or their abode with an effective amount of natamycin. Natamycin, a known fungicide, is used to combat fungi of the genus *aspergillus*, fungi which are known to promote the growth of the house dust mites. Mattresses, bedding, etc are treated with natamycin to destroy the house dust mites and to inhibit the growth of such mites. The natamycin is applied either as a powder or a suspension to the material requiring treatment. D2 would therefore appear to destroy the novelty of present claims **1, 2, 5, 6 and 10** (the term incorporated can also be interpreted as including incorporating by treatment such as disclosed in D2). Other claims can be considered novel as D2 makes no reference to a filling material or to incorporation of the fungicide during the fabrication of the material.

D3 describes a process for the manufacture of an acrylic fibre having persistent antifungal properties by extrusion of a dope comprising an acrylic polymer in solution and an antifungal agent through a die into a coagulating bath. The antifungal agent can be any known neutral organic fungicidal compound. Specifically mentioned are tolnaftate, bifonazole, clotrimazole, miconazole group compounds and phenolic compounds such as chlorophenes, e.g. dichlorophene and hexachlorophene. Example 1 tests an acrylic fibre containing tolnaftate against *aspergillus niger*. It is stated that fibre according to D3 can be used for the manufacture of antifungal textile articles, a bedding fabric or filling material, however, not being mentioned. The presently-claimed subject-matter is therefore to be considered novel with respect to D3.

ii. Inventive Step (Article 33(3) PCT)

As the subject-matter of the present application would appear to have already been addressed by the prior art, said subject-matter can also be said to be correspondingly non-inventive.

One can add that D3 gives a general recipe for producing material having antifungal properties. Therefore, upon recognition that problems with fungi/house dust mites exist within the filling material of upholstery and bedding materials, it is therefore

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB98/03137

considered an obvious measure which would be undertaken by the person skilled in the art to correspondingly produce these materials with the desired antifungal properties.

Claims **1-10** therefore lack inventiveness with regard to the prior art.

VII Certain defects in the international application

Contrary to the requirements of Rule 5.1(a)(ii) PCT, no mention has been made in the application of the documents D1 and D2 or their relevant prior art.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PA 3355	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 98/03137	International filing date (day/month/year) 21/10/1998	(Earliest) Priority Date (day/month/year) 23/10/1997
Applicant AKZO NOBEL UK PLC et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).

2. ☐ Unity of invention is lacking (see Box II).

3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.

☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the title, ☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is:

Figure No. — ☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

National Application No

PCT/GB 98/03137

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A01N25/34 D06M16/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A01N D06M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 24484 A (SOGILO NV ;KLUFT PETER CORNELIS SIEGFRIED (BE)) 10 July 1997 see claims see page 4, paragraph 3 ---	1-10
Y	EP 0 047 553 A (GIST BROCADES NV) 17 March 1982 see page 2, line 11 - line 28 ---	1-10
Y	GB 2 309 461 A (COURTAULDS FIBRES) 30 July 1997 cited in the application see claim 13 -----	1-10

☐

Further documents are listed in the continuation of box C.

☒

Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

12 February 1999

Date of mailing of the international search report

22/02/1999

Name and mailing address of the ISA

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Decorte, D

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/03137

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9724484	A	10-07-1997	BE 1009900 A	07-10-1997
			AU 1361897 A	28-07-1997
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GB 2309461	A	30-07-1997	US 5746959 A	05-05-1998



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/GB98/03137 (22) International Filing Date: 21 October 1998 (21.10.98) (30) Priority Data: 9722448.9 23 October 1997 (23.10.97) GB (71) Applicant (for all designated States except US): AKZO NOBEL UK PLC [GB/GB]; 50 George Street, London W1A 2BB (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): COX, Roland [GB/GB]; 11 Wickersley Close, Darley Abbey, Derby DE22 2XT (GB). (74) Agent: HALE, Stephen, Geoffrey; J.Y. & G.W. Johnson, Kingsbourne House, 229-231 High Holborn, London WC1V 7DP (GB).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: METHODS OF CONTROLLING HOUSE DUST MITES AND BEDMITES (57) Abstract <p>Polymeric articles such as fibres and foams having incorporated therein a chemical compound which has antifungal activity against fungi of the groups <i>Aspergillus glaucus</i> and/or <i>A. restrictus</i> are useful in controlling house dust mites and bedmites <i>Dermatophagoides spp.</i></p>		

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METHODS OF CONTROLLING HOUSE DUST MITES AND BEDMITESField of the invention

This invention relates to methods of controlling house dust mites and bedmites (hereinafter HDM). HDM are typically 5 Dermatophagoides spp., one species of particular significance being D. pteronyssinus.

A major food source for HDM is dead skin fragments (dander). Such fragments are continually shed by humans in considerable quantities. HDM proliferate in particular in 10 bedding, including the fillings of pillows and mattresses, and in upholstered articles and fibrous floor coverings. HDM are xerophilic organisms which do not require liquid water, and they live in the absence thereof. They demand a high humidity environment, requiring a relative humidity (R.H.) 15 of about 70 to 80 percent to survive. They absorb little water from the atmosphere and are effectively reliant on their food as the source of water. HDM typically excrete about 20 dung pellets per day. These pellets are very dry and brittle and are about 30 micron in size. They are 20 readily broken up into particles about 1-10 micron in size. In the absence of free moisture, these particles readily acquire a positive static charge and become airborne. They are of respirable size and are accordingly able to enter the bronchial tubes of the human lung, where they become 25 deposited on the mucus layer in the tubes and absorb water. The particles contain toxins, which are released when the particle is hydrated, and they can cause rapid allergic reactions, including bronchial inflammation and asthmatic symptoms. One such allergenic toxin of major importance is 30 Der p I, which is a highly-stable water-soluble glycopeptide of molecular weight 30,000 derived from the digestive system of D. pteronyssinus.

Considerable effort has been expended in devising methods for controlling allergic reactions caused by the 35 presence of HDM. One general method is the topical use of

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acaricides (the generic name for substances lethal to mites). Other methods rely upon control of the allergenic particles, for example by encasing them or by denaturing or destroying the allergens they contain. A further method
5 relies on the topical application of fungicides. Dead skin fragments as shed have a very low moisture content and a high fat content. As such, they are a poor food source for HDM. Furthermore, HDM require a source of B-group vitamins. Certain microscopic fungi which thrive in the
10 absence of liquid water (xerophilic fungi) grow on dead skin fragments, and they have the ability to absorb moisture from the atmosphere. In consequence, the moisture content of the fragments is raised; their fat content is reduced; and furthermore B-group vitamins and ergosterol, a precursor of
15 vitamin D, are generated. All this makes the fragments a more suitable food source for HDM. Many such fungi belong to the Aspergillus glaucus and A. restrictus groups. Particular species include A. penicilloides and Eurotium repens (A. repens).

20 It is believed that Aspergillus spp. such as A. repens and A. penicilloides are not responsible per se for allergic reactions in humans of the kind induced by HDM.

Topical application of fungicides has the disadvantage that repeated treatment at regular intervals is required for
25 continued control of HDM. Furthermore, fungicides are inherently toxic materials, and domestic topical application of such substances has been criticised for that reason. It is an object of the invention to provide a means of overcoming these disadvantages.

30 Disclosure of the invention

According to the invention, there is provided in a first aspect the use of a polymeric article having incorporated therein a chemical compound which has antifungal activity against fungi of the groups Aspergillus
35 glaucus and/or A. restrictus as a means of controlling HDM.

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Particular species of such fungi include A. penicilloides and A. repens. A particular species of HDM is D. pteronyssinus. The chemical compound may exhibit fungicidal and/or fungistatic activity.

5 The polymeric article may be a natural article, for example a cellulosic fibre, into which the chemical compound has been incorporated by, for example, a dyeing process. Alternatively, which may be preferred, the polymeric article may be a manmade article such as a fibre or foam into which
10 the chemical compound has been incorporated by a dyeing process or, more preferably, during the course of its manufacture. In the case of a fibre, such a manmade article may be of a natural polymer such as cellulose or of a synthetic polymer such as an acrylic polymer based on
15 polyacrylonitrile. Manmade fibres are described, for example, in a series of articles entitled "Fibers" in Ullmann's Encyclopaedia of Industrial Chemistry, 5th edition (VCH Publishing), Vol. A10 (1987) and A11 (1988). In the case of a foam, the manmade article may be of a synthetic
20 polymer such as a polyurethane. Fibres are used for the manufacture of textile articles such as bedding fabrics (including sheets, blankets, pillowcases, mattress covers and the like), upholstery fabrics and floor coverings (carpets). Both fibres and foams are used as filling
25 materials in articles such as pillows, mattresses, duvets and cushions, in which dander may accumulate and HDM thrive. Foams are used as backing materials and underlays for carpets.

According to the invention there is provided in a
30 second aspect a filling material for an article of bedding or an upholstered article, characterised in that in said filling material is incorporated a chemical compound which exhibits antifungal activity against fungi of the groups Aspergillus glaucus and/or A. restrictus. The filling
35 material is preferably in fibrous form. The invention further provides an article of bedding or an upholstered article filled with such material. The invention further

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provides a carpeting material which includes a fibre or foam incorporating such a chemical compound.

Insects such as HDM and mammals such as humans on the one hand and fungi such as Aspergillus spp. on the other hand belong to different taxonomic kingdoms. Many substances are known which are toxic to organisms within one kingdom but are effectively non-toxic to organisms within other kingdoms. The same is true, although to increasingly lesser degrees, between the lower taxonomic divisions beginning with phyla, classes and orders. It is an advantage of the invention that it can make use of antifungal compounds having low toxicity to higher mammals including humans and domestic animals and to other domestic pet creatures. The use of such compounds is accordingly preferred.

Acrylic fibres which incorporate neutral organic fungicidal compounds such as tolnaftate (which is a preferred compound), bifonazole, clotrimazole, miconazole, dichlorophene or hexachlorophene are disclosed in GB-A-2,309,461, and these fibres may be preferred in the invention. Another suitable compound is triclosan. The amount of the fungicidal compound in such fibres is preferably in the range from 0.01 to 2 percent by weight on the weight of fibre. Similar amounts of such fungicidal compounds are suitable also in other kinds of polymeric article of the invention.

Incorporation of the antifungal compound within the polymeric article has the advantages that release of the compound into the environment is minimised and that the antifungal effect is long-lasting and endures throughout laundering and dry-cleaning. Wet-spun acrylic fibres may have the advantage of a fissured structure, which both confers good moisture transport properties and assists diffusion of the antifungal compound to the fibre surface following depletion therefrom. The low moisture regain of synthetic fibres such as acrylic fibres may also be

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advantageous in maintaining a low humidity environment and thereby interfering with growth of Aspergillus spp. and HDM.

The invention is illustrated by the following Example, in which parts and proportions are by weight unless
5 otherwise specified:-

Example

This Example illustrates the fungicidal activity against A. repens of acrylic fibres which incorporate a fungicide and of the use of such fibres in controlling HDM.

10 Acrylic fibres containing 0.4% tolinaftate were prepared by a similar method to that disclosed in Example 1 of GB-A-2,309,461. Such fibres are available commercially from Courtaulds Fibres (Holdings) Limited under the Trade Mark AMICOR AF. Acrylic fibres containing no antifungal agent
15 (available from Courtaulds Fibres (Holdings) Limited under the Trade Mark COURTELLE) were used as control. The antimicrobial activity of the fibres was measured by the parallel streak method disclosed in Example 1 of GB-A-2,309,461, but using a culture of A. repens (IMI
20 094150) containing ca. 3×10^6 spores/ml. Test plates were incubated at 25°C for 4 days. The widths of inhibition zones of fungal growth were measured, and the results (overall range and in parenthesis the average of 12 measurements) are reported in the Table below:

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Table 1

Width of inhibition zone

Control	Confluent growth in all streaks on all plates	
	Minimum mm	Maximum mm
5 Fibre with tolinaftate	0-2 (0.7)	2-6 (3.9)

Human skin (provided by a chiropodist) was sterilised, ground into fine fragments and wetted with synthetic perspiration. It was then used as a culture medium for A. repens. A needle punched nonwoven fabric of open structure was placed in a deep glass dish, to which was then added a known amount of the A. repens culture and fifty HDM. Sticky tape was affixed to the upper part of the dish wall to entrap HDM attempting to climb the wall. The dish was then cultured for eight weeks at room temperature and 75% R.H. The number of HDM stuck to the tape was recorded. Live HDM associated with the fabric were driven out by application of heat, and their number was recorded. The results shown in Table 2 were obtained (average of three cultures in each case).

20

Table 2

Fabric	HDM on tape	HDM with fabric	Total
Amicor AF	36.6	16.0	42.6
Amicor AB	21.7	1.3	23.0
50/50 Amicor AF/Amicor AB	11.3	2.3	13.6
25 Courtelle	32.3	46.0	78.3

AMICOR AB (Trade Mark of Courtaulds Fibres (Holdings) Limited) is an acrylic fibre containing triclosan made in similar manner to AMICOR AF.

The average number of HDM associated with the Amicor AF fabric may be distorted by an apparent rogue result; the individual numbers recorded were 4, 9 and 35.

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If a large number of HDM is found associated with the fabric, the presence of HDM on the tape suggests a thriving culture which is attempting to colonise other areas. If a small number of HDM is found associated with the fabric, the presence of HDM on the tape suggests an attempt by HDM to emigrate from a barren environment.

In comparative experiments, the same procedure was followed except that a synthetic food medium for HDM was used instead of the A. repens culture. HDM thrived on all the samples, and there was no significant difference in HDM numbers between any of the samples.

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CLAIMS

1. The use of a polymeric article having incorporated therein a chemical compound which has antifungal activity against fungi of the groups Aspergillus glaucus and/or A. restrictus as a means of controlling house dust mites and bedmites.

2. The use according to claim 1, wherein the polymeric article is a fibre.

3. The use according to claim 2, wherein the fibre is a manmade fibre into which the chemical compound was incorporated during the course of its manufacture.

4. The use according to claim 3, wherein the fibre is an acrylic fibre.

5. The use according to any one of claims 2 to 4, wherein the fibre is incorporated in a textile article.

6. The use according to claim 5, wherein the textile article is a bedding fabric.

7. The use according to claim 1, wherein the polymeric article is a foam.

8. A filling material for an article of bedding or an upholstered article, characterised in that in said filling material is incorporated a compound which exhibits antifungal activity against fungi of the groups Aspergillus glaucus and/or A. restrictus.

9. An article of bedding or upholstered article, characterised in that it is filled with a filling material according to claim 8.

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10. A bedding fabric, characterised in that it comprises fibre having incorporated therein a chemical compound which has antifungal activity against fungi of the groups Aspergillus glaucus and/or A. restrictus.